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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/836,426	04/17/2001	Tim Dyer	35013.4000	6845

7590

07/15/2003

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EXAMINER

MCDONALD, SHANTESE L

ART UNIT

PAPER NUMBER

3723

DATE MAILED: 07/15/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.
09/836,426

Applicant(s)
Dyer et al.

Examiner
McDonald, Shantese

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Apr 28, 2003.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____ 6) ☐ Other:

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DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-9, 26-29, 32 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lougher et al. in view of Jeng.

Lougher et al. teaches a platen, 211, configured to orbit, (col. 5, lines 46-52), a polishing surface, 108, attached to the platen, a workpiece carrier, 110 and channels in the platen configured to allow polishing solution to circulate through, (col. 5, lines 29-34). Lougher et al. teaches all the limitations of the claims except for the wafer including a low-k material, the platen orbiting about an axis at a speed of about 500 to 2000 revolutions per minute, the platen rotating with an orbital radius of about 0.25 to 1 inch, the carrier and the platen being configured to move the workpiece relative the polishing surface at about 0.8 to 3.2 meters per second, the carrier being configured to apply about 0.25 to 2 pounds per square inch of pressure to the workpiece, allowing the polishing slurry to flow at a rate of about 120 to 200 milliliters per minute. Jeng

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teaches a wafer comprising low-k material, 18. It would have been obvious to one having ordinary skill in the art at the time the invention was made, to provide the invention of Lougher et al. with a wafer comprising low-k material, as taught by Jeng, in order to enhance the range of the machines polishing capabilities. It would have been further obvious to one having ordinary skill in the art at the time the invention was made to make the invention of Lougher et al. with the above listed limitation, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art.

3. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lougher et al. as modified by Jeng as applied to claims 1-9, 26-29, 32 and 33 above, and further in view of Chen et al.

Lougher et al. teaches all the limitations of the claims except for the carrier including a bladder to regulate pressure applied to the workpiece. Chen et al. teaches a bladder, 144. It would have been obvious to one having ordinary skill in the art at the time the invention was made, to provide the carrier of Lougher et al. with a bladder, in order to more efficiently regulate the pressure applied to the workpiece.

4. Claims 11, 30 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lougher et al. as modified by Jeng as applied to claims 1-9, 26-29, 32 and 33 above, and further in view of Kawamoto et al.

Lougher et al. teaches all the limitations of the claims except for the platen including a conduit configured to allow heat exchange fluid to flow through, thereby regulating the

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temperature of the polishing surface and the polishing fluid. Kawamoto et al. teach a conduit configured to allow heat exchange fluid to flow through, (col. 4, lines 25-36). It would have been obvious to one having ordinary skill in the art at the time the invention was made, to provide the platen of Lougher et al. with a conduit to allow heat exchange fluid to flow through, as taught by Kawamoto et al. in order to enhance the temperature control of the polishing apparatus.

5. Claims 12-17, 20 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. in view of Aizawa in further view of Jeng

Chen et al. teaches a plurality of polishing stations, 25, a platen, 30, a load station, 27, a carousel, 60, including a plurality of workpiece carriers, configured to rotate about an axis and translate in a radial direction, (col. 4, lines 16-20). Chen et al. teaches all the limitations of the claims except for a wafer comprising a low-k material, a clean system, a buff station, the platen being configured to move at about 0.8 to 3.2 meters per second relative to the wafer surface, the carrier being configured to apply about 0.25 to 2 pounds per square inch of pressure to the workpiece, the platen being configured to orbit with a radius of about 0.25 to about 1 inch, and the platen being configured to orbit about an axis at a speed of about 500 to 2000 revolutions per minute. Jeng teaches a wafer comprising a low-k material, 18. Aizawa et al. teaches a clean station, 26a, 26b, 26c, and a buffing station, 200. It would have been obvious to one having ordinary skill in the art at the time the invention was made, to make the invention of Chen et al. with a clean station and buffing station, as taught by Aizawa et al., and a wafer comprising a low-k material, as taught by Jeng, in order to enhance the machines polishing capabilities. It would

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have been further obvious to make the invention of Chen et al. as modified by Aizawa et al. with the limitations state above, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art.

6. Claims 18, 19, 22 and 24 rejected under 35 U.S.C. 103(a) as being unpatentable over Chen as modified by Aizawa and Jeng as applied to claims 12-17, 20 and 25 above, and further in view of Lougher et al.

Chen as modified by Aizawa teaches all the limitations of the claims except for a platen configured to orbit, with channels to allow polishing fluid to flow through and a polishing surface which allows the polishing fluid to circulate through a portion of the polishing surface. Lougher et al. teaches a platen configured to orbit, (col. 5, lines 46-52), and channels in the platen and polishing pad which allow the polishing fluid to flow through, (col. 5, lines 29-34). It would have been obvious to one having ordinary skill in the art at the time the invention was made, to provide the apparatus of Chen as modified by Aizawa, with the orbiting platen and channels in the platen and polishing pad, as taught by Lougher et al., in order to enhance the polishing capabilities.

7. Claims 21 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen as modified by Aizawa and further in view of Kawamoto et al.

Chen as modified by Aizawa teaches all the limitations of the claims except for a temperature control system and the platen allowing heat exchange fluid to flow through. Kawamoto et al. teach a platen configured to allow heat exchange fluid to flow through, thereby

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regulating the temperature of the polishing fluid, (col. 4, lines 25-36). It would have been obvious to one having ordinary skill in the art at the time the invention was made, to provide the platen of Chen as modified by Aizawa with a platen to allow heat exchange fluid to flow through, as taught by Kawamoto et al. in order to enhance the temperature control of the polishing apparatus.

Response to Arguments

8. Applicant's arguments filed 4/28/03 have been fully considered but they are not persuasive. The applicant is still arguing that the references do not teach or suggest a method or an apparatus for polishing a surface of a workpiece comprising a low-k material. The Examiner continuously disagrees with the applicant. In the last office action, a reference teaching polishing a workpiece comprising a low-k material was applied. It is still believe that this rejection is valid because the type of workpiece which is used in a polishing system may vary.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

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the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shantese McDonald whose telephone number is (703) 308-8722.



Joseph J. Hail, III
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S.L.M.

July 14, 2003